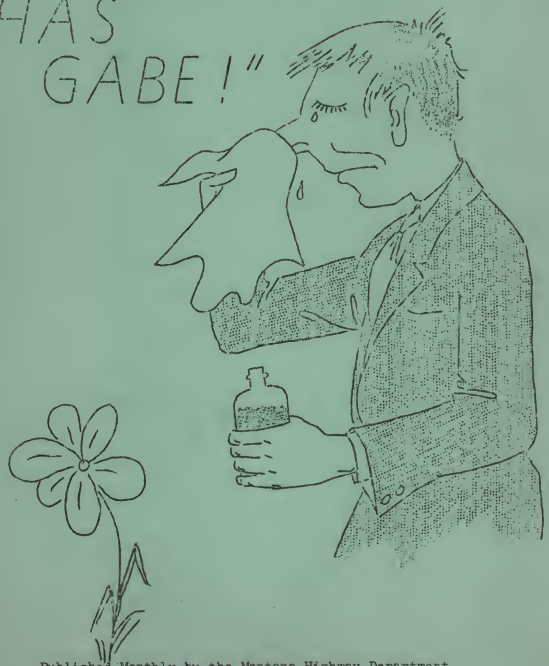
THE CENTER LINE

VOL 3 NO. 5 MAY--1940



Published Monthly by the Montana Highwey Department

GOOD OLE SHAN FRANSHISCO
By
M. Knowles
(San Francisco Correspondent)

The City

It is probably the most exciting city in the world, though I shall have to look over a few more before I am positive about that. It perches all over some hills and canyons. You could fall out of your own back yard and break your neck. The first time I rode up one of its commonplace streets I hoped my former boss never had to experience such a shock. Grades! You walk in peril of your life all the time, and riding is simply foolhardy, but everyone does it.

The first thing you learn in San Francisco is to "Think nothing of it," no matter what "it" turns out to be or do. Your first indentification mark will be Market Street. The streets run normally on one side of it, and on the other side they come in catywampused. This makes for an intersection of three streets at Market, and unutterable confusion. Four street car tracks make the simple act of boarding a street car a matter of life and limb. If the street cars don't get you the trucks and cars will, and all pedestrians hit in safety zones don't count, I am told.

"I don't jaywalk," a friend told me. "If you get killed outside a safety zone, you don't get anything for it." All the streets have little alleys between them, so as to cross up strangers. You might think Fifth and Market was five blocks up from the Ferry Building, at first. Really it is about twice that far, if not farther, and every inch fraught with peril. Of course the residential districts present equally complicated intricacies, but we needn't go into that.

The newspapers are full of vulgar, large headlines, When I was new here, I asked someone what the conservative paper was. I got a contemptuous glance. The news is frequently lurid, even about local events. Everything is rather violent. Political storms and scandals haunt our front pages, but San Franciscans never are particularly excited about them. They are mostly rugged individualists, as far as I can determine, and frightfully busy about their own affairs, which are multitudinous. Down near the wharves you can stick your inquisitive nose into a fertilizer company, a spice house, a fruit warehouse. You can find a house stacked to the ceiling with cheeses ripening gently under a coating of paint. A man with a gun patrols the aisles between, shooting rats. He will give you a bit of odd information about having cats or dogs for this task. "Mother cats make fine hunters when they have kittens," he says, "but they have more hunting than they need, and as the kittens grow up they quit being such good hunters. Tom cats get fat and lazy. Dogs find the going too tough with the big wharf rats.

There is a wholesale district, where gripmen on the cable cars lean out to swear with fierce intimacy at the truck drivers bringing fresh vegetables and stalling their trucks in front of the dinkeys. They shake their fists at each other and sometimes the truck driver climbs down from his cab, mounts the dinkey and shakes his finger under the gripman's nose. Passengers on the cable car read their papers stolidly. They are San Franciscans, and they Think Nothing of It. The streets are covered with vegetables. Purple eggplant, green burrs of artichokes, pale lavender asparagus, every sort of exotic fruit--no wonder the city is full of artists: But San Franciscans Think Nothing of It.

It is the city of music. It is more fun to hear an audience enchanted here than to hear the artists they applaud. They love musicians and musicians love them. I have heard Gili sing almost as many encores as there were numbers on his program at a concert, and I really don't know who enjoyed it more--Gili or the San Franciscans. I have seen a stage play held up by an audience that had taken the bit in its teeth after hearing one song thrown casually into the play. More music. More flowers and flower shops--on the streets, in the big florist shops. More flags and conventions than is reasonable. More parties, more liquor. And I must not forget to tell you that it is illegal to display a sign about Beer or Buffet, which brings us to the reason for all those curious neon signs that say bafflingly, "Beep," "Bees," Puffet," and suchlike. There are no Taverns in San Francisco, either. Thus you are confronted by many a Cavern, instead. And you go to a Cavern where Beep and Puffet are advertised if you want a glass of beer and a sandwich. I believe San Francisco once was famous for these features, now obsucred by city ordinances.

The Climate

I can speak with ease and no self-consciousness on this Bay Region climate. What do I care if the Chamber of Commerce has me tar-and feathered? I can be honest. I am not a native. Few are, but they are vociferous. "Invigorating," they reiterate. But a pamphlet I read on a boat coming up here once, described San Francisco as "nestling under Italian blue skies." Never was such a bold-faced lie. It lies under fog, and the fog is whipped about by an icy, wet wind incessantly. Yes, and the weather Bureau is evidently in cahoots with the city on that point. They claim the sun shines almost every day, and never was such a 1/100th part truth ever published. For it does shine almost every day--a few minutes. Then it is swallowed by fog. I have seen weather at 10 degrees, but never in my life have I shivered like a wet pup for six whole months anywhere else. Then I mortgaged my whole future and bought a fur coat. I wear it summer and winter, not for vanity, but for the same reasons esquimaux wear them. Now let the Naked Sons and Daughters of California string me up if they will! The climate here is terrible. It always is winter except for about ten days, and you never can tell which ten it is liable to be. On these few summer days natives faint and die in herds, and they run bigger headlines in the papers. However, it is a good climate for social purposes, and it is my contention that being forced indoors to keep from freezing, San Franciscans perforce become the finest of hosts and the warmest of friends. Which brings me to People.

The People

They are your sort. I don't care what sort you are, your buddies, the friends of your bosom, are here. Whatever your color, ideas, financial strata, or ambitions, there are more like you here. So far as I have learned in nine years, they are splendidly democratic, too. They have the gracious habit of taking you for yourself, rather than for your pocketbook or job. An interesting bell-hop is more welcome, usually, than a boring financier. You are quite likely to meet both at the same party.

It is the happy hunting ground for women! There are more males than females here! All the women who are native are so smartly dressed it makes your teeth ache. They each and every one are tailored in an inch of their lives. Where I grew up, women thought it was proper to try to be pretty. But here they want only to be smart. Hence, since being "smart" and being "pretty" very frequently do not coincide at all--especially in the eyes of men--a girl can have all the beaux she wants by using a little native intelligence! 'S wonnerful. All the womenwear suits on cold days and coats on frigid ones. Thus they can not escape being tailored and smart. Usually the costume is what I term the "protective coloring" motif. Dull. Respectable, Navy, Brown. Black. Everything conspires to aid the non-San Franciscan female here. Competent hair-

dressers are so rare as to be extinct, too, because San Francisco women want only to look tailored--not pretty.

But the people are fascintating, alive, fun, and everyone is planning to be something else almost instantly. Elevator boys are writing plays. Soda-fountain girls are training to be actresses--smothered in Communism every syllable of the way. They are of every race, color-scheme and religion. There is an old office building referred to as "The Monkey Block," where struggling artists and would-be artists live. They always want to paint you--artists do--and think nothing of asking you to pose for the mermaids in the mural on their bathroom wall. Informally, entirely. But don't be flattered. It isn't because you are pretty. It is only they are insatiable for models--especially free ones. You could be cross-eyed and bow-legged and they still would want to sketch you.

The butcher sings in the municipal opera chorus when the opera season is on. He is Italian and magnificent. Speed cops go to the Met. The clerk at the next desk probably is studying voice and sings like a seraph with wings.' What you thought was probably a food-line turns out to be San Franciscans standing patiently in block-long lines, waiting their turn to get opera tickets to hear their favorites. It is hard to get a ticket to your favorite opera.

A barefoot man clad in a long robe of sacking wanders by with a staff. He has a white beard down to here. San Franciscans Think Nothing of It. But the Governor was hissed and booed for mispronounceing the name of a famous orchestra director last year, I have heard. We will be indifferent to graft, but you better be on your toes about your maestros!

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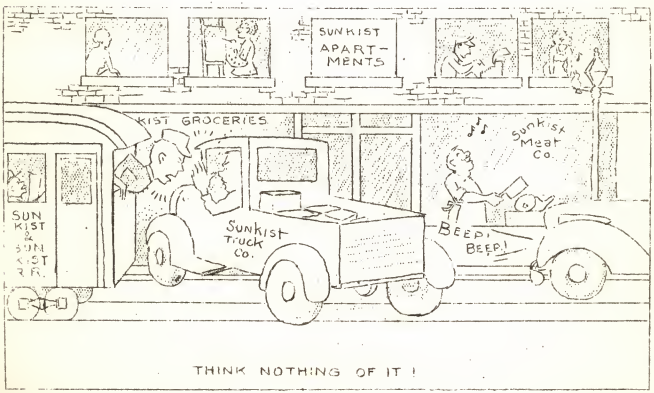

MONTANA HIGHWAY DEPARTMENT
Helena, Montana

REPORT ON MISCELLANEOUS SAMPLE

Lab. No. 2 Sample No. 2 Project No. Unit 2

Designation of project Unit 2 is now located at St. Peter's Hospital

Kind of Material Homo Sapiens

Name and address of manufacturer Mrs. S. D. Patterson, Helena, Montana

Name and address of jobber Mr. S. D. Patterson, Helena, Montana

Submitted by David T. Berg Title M.D.

Address Helena Quantity represented 6 lbs. 8 oz.

Date submitted 2 P.M. 4/8/40 Date Received 4/8/40

TEST RESULTS

Preliminary Analysis:

General Classification - Male

General Composition - Organic
Product of Organic Evolution

Specific Classification - Terry Patterson

Physical Properties: Motion - Periodic, erratic
Sound - Periodic, shrill
Sight - OK, indeterminate
Magnetism - exhibits attraction
Temperature - normal degrees F.
Humidity - periodic, excessive
Color - Red

Formula & Reactions - Being Developed

Summary & Conclusions: Specimen found to be in excellent condition and up to specifications. Recommend continued observation, study, research.

Project is now completed. Maintenance must begin immediately.

* * *

Papa and Mama Stork were comparing notes at the end of a hard day. Papa Stork said, "I'm all in tonight, I made at least 16 deliveries today." Mama Stork said, "They sure had me traveling too. I tallied up at least 12 bundle from heavan." Thenshe turned to Baby Stork and queried,"And what have you been doing all day, Precious?" Baby Stork replied, "Oh boy! did I have fun. I spent the whole afternoon flying around the High School just scaring hell out of those kids."

MAPPING MONTANA ROADS

BY

M. J. Steere, Office Engineer
Montana Highway Planning Survey

Roads and streets are public liabilities. It is about time we found out how many miles there are, where they are, what they are made of, what condition they are in, and whom do they serve. Because the State Highway Department and the United States Bureau of Public Roads were aware of the fact that no such inventory existed, they undertook the task of producing one.

Before going into the detail of mapping Montana Roads, it might be well to pause for a moment and briefly review some of the other agencies that had a hand in the location and construction of the roads that now comprise our system.

In the beginning the Indians followed the game trails through mountain passes and over the prairies which some of our main highways now follow. Next came the trapper who followed the streams and Indian trails. Military roads were then built to facilitate the movement of troops to keep the Indians subdued. Following the discovery of gold in the 1860's, there was a large influx of prospectors who were closely followed by settlers that went into farming and stock raising. Small settlements sprang up that were connected by primitive stage roads. In 1889 Montana became a State. This was followed by the creation of counties; each of which was governed by a Board of Commissioners. The Commissioners designated road districts within the county and appointed a road supervisor for each district. Their activities probably marked the first participation of the local governments in road building financed by taxes raised locally for that purpose. In 1913, after the advent of the motor vehicle, the State Highway Commission was organized. This body acted in a consulting capacity for the several Boards of County Commissioners. Funds for this administrative work were derived by legislative appropriation and from the motor vehicle registration fees.

In 1916 Congress passed the first Federal Aid Road Act, and the State in 1917, in order to comply with the rules and regulations of the Federal Aid Act, reorganized the State Highway Department. Other agencies, such as the National Forest Service, National Park Service, and Indian Service, have built sections of roads that they are particularly interested in. In the last few years there have been other agencies, such as the CCC, CWA, FERA, WPA, and PWA that have made contributions to highway development. Corporations and individuals built roads to give access to isolated timber, mineral and other resources.

There may have been other road builders who have made contributions to the State's rural road system, but we believe that we have mentioned the most important. Not all of the roads built through the years by these various agencies have survived to the present day, but remnants of all of them are to be found in the existing road mileage in Montana. That mileage is the net result of a long road-building effort and it represents our current public liability in rural roads.

In 1917, after the passage of the Federal Aid Act, the question arose -- "How many miles of rural roads are there in Montana?" -- up to this time no one had attempted to set a figure, or make an estimate of the total rural mileage. Even some of the counties did not know just how many miles they had. County maps were so antiquated that it was necessary to bring the information up to date. Some counties included each sheep-wagon trail and others only took such roads as had been designated by the Board of Commissioners. As much as a thousand miles difference was found in a county after the final inventory was taken.

Before starting the inventory, it was necessary to define what constituted a public road. Montana defined a public road as any road that was not closed by a gate and served two or more farms. Accepting this definition of a road, the Montana Highway Planning Survey measured the entire rural road system. Field crews noted the location of bridges, farm dwellings, churches, cemetaries, community halls, airports, etc., that might pertain to highway location and design. The official total State rural road mileage, including the primary system, now stands at 65,730 miles.

In order to arrive at a total mileage of rural roads and city streets and alleys in Montana it was necessary for representatives of the Planning Survey to contact city and town officials of the State. By this means and studying city plats there was found to be 2,199.7 miles of streets and alleys within incorporated towns.

To sum up, the total public responsibility in roads, streets and alleys is as follows:

Federal Aid	5,685.4 mi.
County and Local Rural Roads	60,044.7 mi.
Urban streets and alleys	2,199.7 Mi.
Total	67,929.8 mi.

This figure represents a real and a tremendous public liability. Every one of these 67,929.8 miles of roads, streets and alleys demands at least a certain minimum amount of attention. People live on them and even though the density of the population they serve is small in some sections of the state, these people are dependent on the highways for their livelihood, their safety, and for most of the contacts and services on which modern civilized life depends.

The greatness of this liability can not be appreciated without reference to the financial resources which can be mustered to meet it. Even with the financial power of the nation, the State, the local units, behind the work it is becoming more difficult to meet the costs of maintenance and improvement. The motor vehicle revenues will not suffice to finance the whole job and if the present revenue were distributed equally over the entire mileage, it would barely meet the maintenance cost. It is therefore, necessary to go over the entire mileage and select from it a net system which will be within the ability of the motor vehicle owners to support. This will leave the balance of roads, whose character and service make them the responsibility of the general public.

Under the provisions of the Federal Aid Act, it is necessary for the State to select a Primary and a Secondary System. The only practical way to make this selection is to assemble all available data on the various county maps and then after careful study to choose such roads that meet the requirements and place them on the system. It would be fine if all the basic information could be placed upon one map, but if this were done the main picture would be lost under the mass of detail. To overcome this objectionable feature, different series of maps were made.

These maps are drawn to a uniform scale and they will show, county by county, the location and length of every existing road and highway. Compiled from data, gathered in the field from a careful physical inventory and appraisal of these highway facilities. They also represent the first authentic and inclusive information ever to be compiled for the entire state of Montana. They will comprise a complete and detailed view of the physical highway plant.

A description of each series of maps compiled from the data gathered by the Highway Planning Survey's inventory follows:

County Base Map Series.

Each of these maps cover one county, and they show all section and township lines; principal streams and rivers; railroads, cities, and towns; cultural features such as farm dwellings, schools, churches, business and industrial establishments, cemetaries, airports, etc., and all roads are shown with an open band. These maps are used as the base upon which all other information is shown. Each fall a representative of the Planning Survey contacts the officials of each county and collects all the latest data pertaining to additions or subtractions that are to be made to the maps, and during the winter months these corrections are made. It is the aim of the Planning Survey to make these maps the most accurate and up-to-date of any map ever produced of the State.

County School Bus Series.

Upon the base map is shown all routes traversed by school busses, transporting children to and from school. There are 2,059 school districts in the state and it is to be expected that more and more of them will consolidate as the transportaion facilities become improved.

Postal Route Series.

On this series of maps are shown all postal routes. They are shown by three different symbols. The first shows the roads traversed by Rural Free Delivery; the second, roads used by Star Routes; and the third, those roads that are used by both.

Bus and Truck Series.

If we showed every road upon which a commercial truck or bus travelled, we would have to include practically every road in the State. The Montana Railroad Commission issue three classes of licenses, as follows:

Class A. Motor carrier between fixed termini, or over regular route, on approved schedules and approved tariffs.
Class B. Motor carrier not over regular route or between fixed termini on approved tariffs.
Class C. Motor carrier for hire under contract, charter, agreement or undertaking.

On our Bus and Truck map series, we have only shown the Class A motor carrier as they have a fixed schedule over a regular route.

Transportation Map Series.

On this series of maps are recorded all items relating to transportation such as railroads, road types, navigable waterways, pipe lines, and air lines. This is information that the State Highway Administrator's are vitally interested in. Up to this time only one or two counties had sketchy maps that showed the kind of surface on all the roads in the county. Most of the counties had some kind of a map but in the majority of cases, even these were several years out of date. A reduced copy of one of the transportation maps is shown on a following page of this Center Line.

Traffic Map Series.

Traffic maps of each county have been made using the transportation map series as a base, upon which are shown by flow bands, the average daily traffic on

each mile of road. Never before in the history of the State has such a set of maps been made. The State Highway Department for several years has made traffic flow map covering only the Primary System, but when it came to county roads, no data had bee taken, nor maps drawn. Traffic is now correlated with the type of road surface show on the highway transportation map. This series of maps was needed primarily to aid in setting up a State Secondary System of roads.

It is hard to estimate to what different uses these several series of maps will be put. We already have evidence that the public is keenly interested in them. Public agencies and many kinds of private businesses have obtained from one to an entire set of maps. We feel that the demand will increase as the knowledge is sprea that there are such maps to be had.

The main purpose for gathering all this information and placing it upon maps was to get on record the rural roads for which the public is responsible. In other words, to produce a full and accurate picture of the rural section of that vast public liability which is represented by 65,730 miles of rural roads. More tha that, it is getting on record the present state of improvement of these roads, the extent of their use, and what their functions are.

From these maps and data the administration of the State Highway Department can set up a Primary and State Secondary System that will adequately serve the peopl of Montana.

* * * * *

INSURE OR GAMBLE!

WHICH?

Insurance contracts should not be gambling devices. No one can afford to gamble on the probability of the happenin of the event of death, injury, fire or personal liability. The happening of the event is serious, and insurance against losses suffered by the happening of the event must be laid on a sound, solid theo of indemnification. Any contract which varies from the sound principles of indem nification is not an insurance contract, but a gambling contract.

Those companies which sell sound, reliable insurance contracts are not evading the laws of this state. They comply with all the insurance laws and secure a state license for themselves and their agents before they engage in the insurance business. The "Gambling Contract Companie bootleg their policies. They do not secur a state license for the company, and their agents are not licensed.

Did you ever hear of a bootlegger selling high quality merchandise? You would expect a bootleg insurance company to sell a gambling contract.

Insurance sold by nonlicensed companies is slot machine insurance coverage. Do you want your protection to be slot machine protection? Of course not. Don't play the slot machine when you buy insurance. Buy insurance only from licensed companies through licensed agents.

Remember! Any insurance is good insurance until you have a loss. It is one thing to buy $5,000 of insurance for $3, and quite another thing to collect $5,000 of insurance on a $3.00 policy.

If you have any doubt as to whether a company or an agent is licensed, just write to JOHN J. HOLMES, State Auditor and Ex Officio Insurance Commissioner.

* * * * *

MEET

MARIE MYLES. Here is a nice little redheaded number that was born in Helena and is at the present time of legal age. This young lady takes her whiskey straight and is the owner of a fur coat in fair condition and recently has survived an appendectomy. She is a good scout on a party and always shows for work the next morning regardless of the hour of arrival at home. In an emergency can drive a car.

LUCILLE ANGVICK. Here is another redheaded number from Reserve, Sheridan County Montana. Having not been very long employed by the Commission, her outlook on life is very indefinite, although she shakes a mean hip and has a wicked sparkle in her eye. Probably prefers straight gin to any "high falootin'" fancy mixed drink.

SALLY BYRD. Hails from Aberdeen, South Dakota, is of legal age and still has her sweet disposition, although last winter was very drastically relieved of her appendix. This ailment was quite common during the cold weather. Is also a possessor of a fur coat. Can't take her whiskey straight but will take it in any manner so long as it is spoiled before being imbibed. Can dance from dusk to dawn. This gal also sports a mop of red hair.

NICOLENE CARLSTON. Hails from Hoffman Route, Livingston and is a stenographer in the Patrol office. She is a stunning blonde fisherwoman of an even disposition. Has known to party and takes her whiskey straight. After visiting Livingston on a weekend has a bad Monday morning owing to Sunday being given over to the strenuous art of horseback riding.

MARY MCCARTHY. Hails from Missoula and points west. She is the headliner of our charming brunettes and at present is employed as a stenographer with the Highway Patrol. Mary is a good dancer and for an escort she never lacks. Last winter, with time heavy on her hads, she took up the sport of skiing, but owing to having the wrong kind of ancestors, the sport soon died for lack of nourishment.

FRANCES DURFEE. Was born in the shadow of the State Capitol and during her stay on earth has never wandered far. Frances is a good scout and is always ready for fun and frolic. Has been known to take her whiskey straight. Her winter recreation consists of staying home reading good and bad books. Summer recreation consists of automobile riding, and according to the highway grape vine this young lady is partially spoken for.

JANE SCHUYLER. Is a local product and a very recent addition to the Highway personnel. She's a top-ranking brunette, shakes a mean hoof and can drink Scotch and Sodas with the best of them. She attended the State University for two years before joining the ranks of working gals. She skiis during the winter, can climb a mountain like a mountain sheep, and can swim like a pro.

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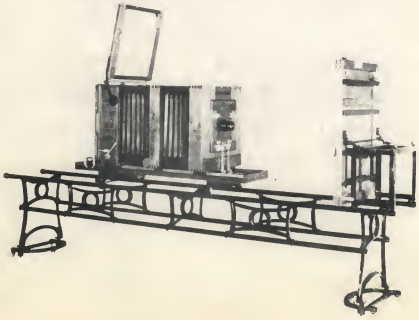
Production and Reproduction

Recent visitors to the Planning Survey, located on the lower floor of the Highway Building, have found a door on which is written a 'No Admittance' sign in large letters. Behind this door, complete equipment has been installed to take care of the work that would otherwise have to be done commercially, and in many cases, out of the state.

It was found, after a complete survey of the costs of reproducing drawings and sketches for the "Bridge Condition Survey", and the numerous other reports and charts which is required of the Planning Survey, that an installation of modern equipment with monies that would otherwise go out of the state, a department could be set up in our own building to do the work and be available for the use of other departments of the organization.

At the present time, the equipment consists of a modern gallery-type camera complete with stand, which is 12 feet long and equipped with a Goerz Gotar lens having a focal length of 19 inches. The maximum film size that can be used is 18 by 22 inches. This equipment will make negatives up to 4 to 1 reduction, i.e., one-quarter size of the original and will make enlargements up to 2 to 1, or double the size of the original. The maximum capacity of the copyholder is 5 by 7 feet.



It also has twin arc lamps, a vacuum printing frame, a completely equipped "Dark Room", and duplicating equipment for putting out charts and reports on convenient letter size paper in place of large, cumbersome sheets.

As stated before primarily installed to take care of Planning Survey work numerous other applications for the other departments have become a regular procedure such as:

Making 400 foot scale negatives of Plan Sheets this work was previously sent out of the state which caused the department to be without tracings of all jobs up for letting for a period of five days or more

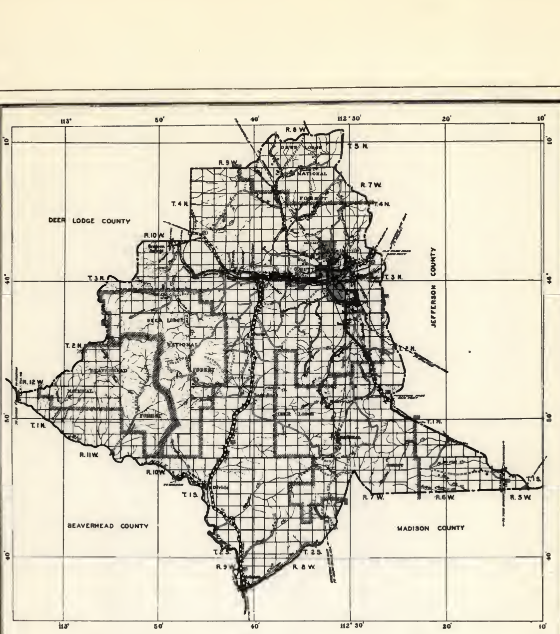
The reducing and reproduction of the old large size "Bid Tabulation" on letter size paper, and having same available for distribution on the day following the awarding of contracts.

Right of way Plan Sheets, that previously had to be replotted to 400 foot scale from the original plan sheets, are now reduced by photography at a great saving in time.

Every day, new applications for the use of this equipment presents itself

The picture of the camera and map of Silver Bow County, as shown in this issue of Center Line, are samples of the work that is being done by this department

The installation of this equipment, along with the Electric Accounting Machines described in a previous issue shows that the Montana Highway Commission is not standing still but keeping abreast with the times in regard to the adoption of modern, economical, mechanical equipment



LEGEND

- PRIMARY ROADS .02 INCH WIDE ALL OTHERS .01 INCH WIDE
- PRIMITIVE ROADS (WITH BRIDGES WHERE REQUIRED)
- UNIMPROVED ROADS
- GRADED AND DRAINED ROADS
- METAL SURFACED ROADS
- BITUMINOUS SURFACED ROADS
- PAVED ROADS
- FED AID ROUTES (ON NEW LOCATION ROAD)
- FED AID ROUTES (ON EXISTING ROAD)
- HIGHWAY BRIDGE (GENERAL) W-WOOD, S-STEEL, C-CONCRETE (ABOVE) T-TRUSS, G-GIRDER (BELOW)
- DRAWBRIDGES
- ARCH BRIDGES
- FREE FERRIES
- TOLL FERRIES
- HIGHWAY TUNNELS
- PASS
- U.S. HIGHWAYS
- STATE HIGHWAYS
- FED AID SYSTEM
- DAM WITH ROAD
- DAM WITHOUT ROAD
- RAILROADS
- RAILROAD STATIONS
- RAILROAD CROSSING
- RAILROAD ABOVE
- RAILROAD BELOW
- PRIVATELY OWNED RAILROADS
- AIR ROUTES
- DEPT OF COMMERCE INTERMEDIATE FIELDS
- COMMERCIAL OR MUNICIPAL FIELDS
- MARKED AUXILIARY FIELDS
- LETTER "S" INDICATES HOUSING FACILITIES
- GOLF GROUNDS OR COUNTRY CLUBS
- FAIR GROUNDS
- CEMETERIES

- INCORPORATED TOWNS
- STATE CAPITAL
- COUNTY SEAT
- OTHER TOWNS

IN USE NOT IN USE

- FARMS
- DWELLING
- GROUPS OF DWELLINGS
- SMALL BUSINESS ESTABLISHMENTS
- TOWN HALLS
- CHURCHES
- SCHOOLHOUSES
- CORRECTIONAL INSTITUTIONS
- INDUSTRIAL PLANTS
- BEET DUMPS
- CAMPS OR LODGES
- RANGER STATIONS
- LOOKOUT STATIONS
- SAWMILLS
- CAMPGROUNDS
- SEASONAL OR SUMMER COLONY DWELLINGS
- MINES, QUARRIES OR GRAVEL PITS
- OIL OR GAS WELLS
- TANKS
- POWER PLANTS
- FORTS
- RADIO STATIONS
- GARBAGE DUMPS
- STATE ROAD GARAGES
- SEASONAL INDUSTRIES (CANNERY OR MILL)
- GAME FARMS
- U.S. PORTS OF ENTRY
- STATE COURTESY STATIONS
- STATE COURTESY STATIONS WITH PIT SCALES
- HOT SPRINGS
- C.C.C. CAMPS
- YOUTH AND HEALTH CAMPS
- GAUGING OR PUMPING STATIONS
- PARK

N

GENERAL HIGHWAY AND TRANSPORTATION MAP

SILVER BOW COUNTY
MONTANA

PREPARED BY THE
MONTANA STATE HIGHWAY DEPARTMENT
IN COOPERATION WITH THE
U.S. DEPARTMENT OF AGRICULTURE
BUREAU OF PUBLIC ROADS
DATA OBTAINED FROM
STATE-WIDE HIGHWAY PLANNING SURVEY

1936
POLYCONIC PROJECTION
NORTH AMERICAN DATUM
POPULATION (1930 CENSUS)

LOCAL SYSTEM REVISED
PRIMARY SYSTEM REVISED

BASE MAP
APPROVED MAR. 11 [illegible]

A N N O U N C E M E N T S

Here is an opportunity for artists within the organization to do their stuff! Beginning with the June 1st issue, Center Line will print reproductions of one to four cartoons each month drawn by members of the highway personnel. Ideas and drawings must be original. They should be drawn on an 11" by 16" sheet of white paper with pen and ink and mailed either flat or rolled, (no folds). Subjects must pertain to Highway Department activities, either office or field. The competition will continue as long as material is submitted and the grand prize winner will be given a life subscription to Center Line. DO YOUR STUFF!

* * *

At the suggestion of our San Francisco Correspondent, M. (for A-MAY-ZING) Knowles, we are opening two new sections to our contributors, viz. (1) Tall tales and (2) Things I Can't Stand. Liars and those with pet aversions can do their stuff.

* * *

Spring poems will be received by the Center Line up to the 20th of May. A medal will be awarded the author of the worst poem submitted. If you can turn out anything lousier than the following, send it in. Ed.

INGSPRAY by ANLEYSTA

The gentle (?) Spring is here at last,
Or tarries at the door.
No more does winter's chilling blast
Congeal us to the core.

The frost pin's laid upon the rock,
The tape is smeared with muck.
The dust swirls through our dadgummed shack
And settles in the chuck.

The slope stakes sprout along the way,
They're lettered quite profuse.
The axeman pounds 'em down to stay,
The skinners knock 'em loose.

The rodman chortles at his work
And prowls among the sage
Where deadly rattlers crawl and lurk
And vicious wood ticks rage.

Those wood ticks climb the tapeman's spine
On bloody work intent.
He ambles gaily down the line
This ultra hardy gent.

The levelman is on the peck.
He calls the rodman names.
Because the benches fail to check
That is the bird he blames.

(Continued)

The project engineer gets tough,
He raves, the air he fans,
And curses long in language rough
The guy who made the plans.

The grade's too high, the grade's too low,
And nothing seems just right.
While seventeen other kinds of woe
Assail the luckless wight.

And then it snows and hails and rains.
The gang is caked with loam,
So as the feeble daylight wanes
They hit the trail for home.

So pass away the days of Spring,
Some bright and others gray.
There's one that's always fair, by jing,
The day we get our pay.

F. E. Stanley

(On second thought this isn't as lousy as Mr. Stanley promised. Entries will have to be much lousier. Ed.)

* * *

Tentative plans are being made for the annual Highway Department dinner dance to be held at the Civic Center Ballroom in Helena, May 25th. Plans are being formulated by a committee consisting of Roy Cheney, Jim Higgins and Bob Fletcher. It will be fully as informal and gala an occasion as the party last year, and the date is set for a Saturday evening in order to stimulate a large attendance from the field. Further details will be mailed to each division as plans progress.

* * *

The Department's new map was received the middle of April. It was printed by Rand-McNally Map Company of Chicago. It is on a slightly larger scale than any of the previous editions. The cover is reproduced from a color poster designed and painted by Shorty Shope. A three dimensional topographical effect has been used to emphasizemountainous areas. The inset map of Yellowstone Park has been changed to show Montana connections from the Park entrances to U. S. #10. There is also a message from Governor Ayers directed to visitors and a welcome to such guests from the Highway Department. 150,000 copies were printed.

* * * * *

From Kalispell our attention is called to the last paragraph of Montana Highway Department Weekly Progress Report of Division No. Six, April 13, 1940.

"Historical markers 89 and 95 at Bad Rock Canyon and Eureka, respectfully, have been hung April 12th."

Nothing like having things hung respectfully. Nice bunch of fellows up there.

ROADSIDE IMPROVEMENT

By

Carl Berggren,

Special Design Engineer

In June 1933 the Public Roads Administration made it mandatory that each State Highway Department include in its program of construction of the Federal Aid highway system a definite number of projects that would provide for the appropriate landscaping of parkways or roadsides. This work should embrace the selective cutting or pruning of existing growth, the removal of stumps, dead material, etc., the obliteration of borrow pits, traces of old roads and other construction scars, the flattening of slopes, the rounding of slope intersections, seeding or sodding of shoulders and slopes and the planting of sufficient amount of suitable material to accomplish a reasonable comprehensive roadside improvement.

No maximum limit has been set on the amount of the Federal funds available to a State that may be used on roadside work, but the minimum amount as originally set up was 0.5% of the total sum allotted to each State for road construction.

This sum was later increased in 1935 to 1%. The Public Roads Administration emphasized that this minimum percentage was not to be construed as a recommended allotment to roadside improvement projects, but rather as a minimum compliance of the requirements of the rules and regulations. Many states, particularly in the eastern portion of the country, where highway systems were in further progress and larger appropriations were available, a percentage as high as 15% of their respective allotments have been spent on roadside improvement work.

It is important to mention here that the small percentage allotted for roadside work is for the purpose of experimentation and demonstrations of the possibilities of obtaining pleasing and effective roadside treatment. It is the expectation of the Bureau that the results of the expenditures will provide methods that will later be incorporated in all highway construction work so that a more extensive mileage of roadside landscaping will be obtained.

Roadside improvement is a comparatively new phase of highway construction, but is gradually being recognized throughout the country as one of the necessary elements. In many of the western states it was of necessity that the highway engineers and officials devote their efforts to the extension of mileage of road construction with only slight attention to aesthetic features. In the hurry to meet the demand of the public many mistakes were made to provide smooth riding road surfaces. Cities and towns being tied together by the shortest and most economical means of road construction. These early pathways of transportation of yesterday are the hazards of today. Many of the important aspects of highway construction were un-thought of or overlooked through the necessity of keeping the driving public out of the mud.

We are now in the period of reconstruction and the engineers have gained much by their experience in the principles of construction. The old roads that followed land surveys, made right angle turns, wound along contour lines and around steep hills are gradually being reconstructed to meet the pressing needs of the growing volume and increasing high speed traffic. These newly reconstructed routes will be the permanent highways of America.

The highway affords to a considerable extent a recreational facility to the people from cities and villages who are attracted by the scenic charm of the open country. Tourist generally seek routes of greatest beauty and are

rapidly becoming conscious of the fact that the roadways, as constructed, are left unfinished. To present a finished highway it is necessary to landscape the roadside and preserve as much of the natural beauty as possible, to clothe the manmade scars with the most becoming garb. Our lakes and rivers, our mountains and valleys, our woodland, prairies and badlands are all scenic advantages enjoyed and admired by the tourist and are worthy of every effort to accentuate as features in the highway development program. These advantages should be correlated with the construction factors to obtain the desired aesthetic appearance The creation of overlooks, picnic areas, roadside drinking fountains and parking spaces wherever scenic interest and public use would justify such a development sho be coordinated in all improvement projects.

It is essential that Roadside Improvement projects be confined to sections of roadways that are reasonably permanent and constructed to later standards of design. Wider shoulders with fill slopes not steeper than three to one is conducive to greater safety, economy of maintenance and a more natural appearance. Back slopes should be sufficiently flat and streamlined to allow restoration of natural growths and a control of erosion. Topsoiling, seeding, sodding, or planting and mulching should be provided wherever practical.

Where native ground cover plants or shrubs are available in necessary quantities near the highway, these can usually be successfully collected and planted providing the plants can be transplanted directly to the planting site without delay. The transplanting in any case should be handled under the supervision of well trained and experienced personnel. The results of the planting is often the difference between success and failure.

Planting arrangements or design should follow closely the principals and habits of nature. The arrangement should generally be of the informal type. Formal rows of trees along a highway are wholly out of place with few exceptions. Trees in their natural state do not occur in long straight rows or any other particular geometric shapes. Irregular and variable groups present more effective and natural settings.

Formal planting arrangements are usually found on curves, intersections of roadways, approaches to towns or cities and along city streets. Slower traffic speeds are usually in order along these locations.

A good landscape must have composition, viewpoint, unity and proportion. The highway is a succession of pictures presented to the eye when moving at high speeds. The trees and shrubs adjoining the highway frames the views or scenes beyond. It is sometimes necessary to remove natural growths where dense thickets or clumps screen the views beyond. By careful selective clearing beautiful views of lakes, rivers, mountains or valleys can be obtained.

Roadside improvement projects are very often initiated by cities or towns, garden clubs or other civic organizations interested in improvements along the roadside in their own particular locality. These requests for improvements usually require intensive planting projects of a formal or semi-formal type which results in costly maintenance. Where these project benefit largely the community and require perpetual maintenance, it is necessary that local city or town officials agree to maintain the improvements undertaken by the highway department.

Several commendable planting types were undertaken last year that have not been tried before in this state. These experimental plantings will be interesting to watch and if found successful will undoubtedly stimulate the desire to create more of this type of work.

The planting of trees and shrubs to form a living snow fence has been undertaken at several locations throughout the state. The following are examples under observation:

1. McDonald Pass, Elevation 6300 ft.

This planting consists of 300 - 18" to 24" Douglas Fir and 200 native Juniper. All materials were collected from adjoining fields and transplanted on prepared areas. The location is near the summit of the mountain which is windswept and subject to deep drifting snows in the winter. Plant life has apparently found difficulty in establishing itself, except in more sheltered locations. The first years loss consisted of 3 Douglas Firs and approximately 25% of the Junipers. The trees have survived the driving winter winds and heavy snows and should eventually result in a beautiful permanent snow barrier that will help control snow drifts that have reached a height of 15 to 20 feet on the roadway.

2. Georgetown Lake, Elevation 5200 ft.

2000 feet of snow fence planting were completed last spring. This planting was formed in irregular lines along the lake shore as a barrier to drifting snow across the lake when frozen. Approximately 6000 Caragana shelter belt plants were used in this planting. There is considerable rainfall in this area and the soil along the lake is usually quite moist. No additional application of water will be required once the plants are established. Plants have survived the winter and this spring indicate that a good showing will be made this season.

3. Sidney-Fairview, Elevation 1920 ft.

This planting consists of several thousand feet of Russian Olive plantings to be used as living snow fence and a screen for large irrigation bank. Watering will be required only during the first growing season. Little or no maintenance should be required after the first year's growth.

Russian Olive and Caragana are used extensively for farm shelter belts in this state and because of their drought resistance and hardiness have proven very successful. Caragana, however, are subject to defoliage by grasshopper invasions. Native willow, buffalo berry, chokecherry, and native juniper are other native specie of plants that may do well if used in the correct location.

4. Belton Entrance to Glacier Park

This improvement is probably one of the most interesting one ever undertaken in this state. Thousands of native plants were used to provide a natural landscape. All materials were collected in adjoining fields and transplanted last fall under force account procedure.

An early spring inspection indicates very little loss of plant life and it is expected that this project will be an outstanding example of what can be accomplished with native materials.

5. Missoula Wye

The primary purpose of this improvement was to provide accommodations for tourists at the Port of Entry Station. In order to comply with federal regulations it is necessary to keep costs of structural items under 15% of the total cost of the project. Buildings, walks, curbs, water supply systems, sewage systems and etc. are considered incidental items of a comprehensive Roadside Improvement Project.

The improvements on this project consisted of a drilled well 240 ft. deep with pressure pumping system to supply water for drinking water fountain and plant materials around the buildings. The pumping system is housed by a building which includes men and ladies toilets with sanitary units and sewage disposal.

Due to the large proportion of structural item on this project it was necessary to extend this improvement for several miles from each leg of the wye. Grading, rounding cut slopes and the planting of groups of trees where moisture was in evidence consisted chiefly of these improvements.

A Similar project is now under construction south of Crow Agency. Projectsof this nature contain a large number of bid items and require considerabl engineering and ingenuity on the part of the engineer in charge.

A continuation of this article will appear in the later issue to describe planting methods, materials and maintenance.

* * * * *

DEFINITIONS OF A HIGHWAY ENGINEERING CREW

Stake Puncher --
New man, hard worker, still fired with ambition. "The meek shall inherit the earth" --also the sledge hammers.

Chainman --
Inanimate being. Coaches stake puncher, curses rodman, and does nothing.

Rodman --
Man with hero worship of instrumentmen and burning jealousy for other rodman. Impressed with self-importance. Usually able to set up transit and add two and two.

Officeman --
Lowly individual with no brains, less ability and infinite patience. Stooge for everyone, and cover-up man for the crew.

Grade Inspector --
Primitive man. Subsists on mixture of dried sandwiches, alkali dust and corn whiskey. Purpose in life is to watch the contractor's equipment at work.

Assistant Inspector --
Similar to officeman. Subject to beck and call of all other titles. Heel to the contractor and hell to the resident.

Concrete Inspector --
Man of average ignorance. Equipped with steel rule, two pencils and a sour disposition.

Instrument Man --
Man devoid of soul. Priate at heart. Flat at the foot and swelled at the head.

Assistant Resident --
Man without a country.

Resident Engineer --
Man with Simon Legree complex. Insists on more work, more changed orders and less time off for the crew.

The Department's versatile artist, one Irvin (Shorty) Shope has of late been threatening the radio supremacy of such commentators as Lowell Thomas, Walter Winchell, et al. Appearing on the Montana Boosters' Program in conjunction with Gene Naegele of the Naegele Printing Company, he has blasted the airways over the Z Bar Network with descriptive comments and alleged historical data pertaining to various Charlie Russell paintings.

He also reports blisters in a new place. For once they are on his hands. He has been diligently sinking shafts for fence posts. This great lover of the outdoors has had the temerity to erect a barn and corral within sight of the Highway Department Building to house his roman-nose equine, Old Buck. He insists that he consulted the weather bureau and that according to the prevailing winds, the corr lies to the leeward of us. We are waiting for the first hot day to verify his calculations. This publicity is given him in consideration of the fact that he has just returned a jitney which he borrowed some six weeks ago to buy a coke.

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The following song of praise of Leo Massman of Dillon by Harry James of Dillon would indicate that Mr. James is at least an uncle: -- "We have long known the calibre of most of the personnel of the Montana Highway Department, especially the engineering personnel. However, it remained for a practically new man in the organization to start something, which, according to the number of childless engineers (Married) I have run across (and believe me they are many), should put him in line for at least a Division Engineer's job. I refer to Mr. Leo Massman, Chairman on 344-B, at Dillon, Well the news is, to wit: Leo (and notice that Leo mean Lion, the King of the jungle) is the proud father of twin girls, born April 6th at Bozeman. I guess congratulations are in order."

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FASHION NOTES

Northern:

Esquimo lasses have fat on their chasses,
And they look as greasy as sin.
On long Arctic nights, without even their tights,
They cosily sleep in their skin.

Southern:

African cuties attend to their duties
Clad in a manner alarming!
In only a belt they stroll on the veldt,
And their men consider them charming!

****

UNOFFICIAL DIRGE

Come shed a tear for Mary Doe,
Who died of shame, disgraced;
Who caused her boss unending woe,
His faith in her misplaced.
For Mary was a feckless sprite
Fly in official ointment--
It was a sorry day she took
Probational appointment.
And ere she left this vale of tears,
I shudder to confess,
A letter that she wrote--I fear
Official business--
Got signed and mailed before 'twas known
The flaw that lurked thereon.
Careers lay shattered right and left
From here to Washington!
When every check had been applied,
Down to the last initial,
They found a pithy paragraph
That simply warn't Official!

Moral:

When you can say it with a blank,
Oh never write a letter;
But if you must, then make it terse,
And if it's dull, it's better.

M.Knowles

AMERICANS ON THE HIGHWAY
by
R. H. Fletcher, Traffic Engineer

The 1940 edition of AMERICANS ON THE HIGHWAY, "A survey of recent trends of tourist travel" carries some very timely data. This booklet is published by the American Automobile Association. It is an analysis of material gathered from all parts of the nation for the presentation of a factual outline of our $5,000,000,000 travel industry.

Going back to 1938, the booklet asserts that the decrease in tourist expenditures for that year was due to a number of factors, viz. (1) The business recession, (2) The weather, - no protracted periods of excessive heat in the urban centers. (3) Crises in Europe. (4) Unsettled political conditions in Mexico. (5) The prospect of two World Fairs resulting in vacationists curtailing their expenditures in anticipation of a trip to one or both Fairs the following year.

Interesting break-downs of the tourist dollar is also given, one provided by the United States Travel Bureau and covering both inter and intra state travel; the other arrived at by the American Automobile Association covering interstate travel only. Some of the glaring discrepancies between the two break-downs are notable examples of the woeful lack of accurate determinations by agencies which should be interested the most. The AAA data are evidently procured from carefully prepared questionnaires submitted to the membership of that organization and the United States Tourist Bureau has availed itself of many uncorrelated source With very few exceptions, State agencies have developed no accurate checking methods to determine the value of their tourist business. Their estimates, in most cases, are wild guesses prone to lean toward the optimistic side. The two break-downs follow:

U. S. Travel Bureau

Accommodations	5%
Recreation	22%
Food	10%
Refreshments	5%
Transportation	58%

AMERICAN AUTOMOBILE ASSOCIATION

Accommodations	20%
Amusement	8%
Food	21%
Refreshments & Misc.	6%
Incidental retail purchases	25%
Transportation	20%

The article states that $5,000,000,000 is a conservative estimate for motor travel expenditures in this country during 1939. It also calls attention to the fact that the closing of schools is a highly important factor in the stimulation of summer travel and that during 1939, 52,500,000 people were on the move in 15,000,000 cars, or an average of 3 1/2 persons per car. They spent an average of $6.00 a day for 16 days or $96.00 per person for the full vacation. On the basis of the AAA travel dollar break-down, that means $1,000,000,000 spent for gasoline, oil, repairs and garageing; $1,000,000,000 for places to sleep; $1,250,000,000 for camping supplies, sourveniers, knickknacks and other incidental

expenses; $1,050,000,000 for meals; $400,000,000 on golf courses, theaters and other places of amusement; $300,000,000 for pop, hot dogs, and other refreshments. Such astronomical figures place the tourist business in the ranks of the nation's leading enterprises.

To serve these vacation motorists, there are 20,000 hotels in the U. S., between 15 and 20,000 tourist courts and camps, at least 200,000 tourist homes, 400,000 retail gasoline outlets and innumerable roadside stands dispensing such things as pop and hot dogs. These wayside refreshment establishments account for a large share of the nation's annual consumption of $4,500,000,000 weenies and 12,000,000,000 bottles of pop.

As indicators for 1940 travel prospects, the article cites the following Tourist expenditures closely follow the prosperity curve and better business conditions. There has been a recent upward trend. Winter travel showed a decided increase, perhaps largely inspired by the nationwide interest in winter sports. Gasoline consumption has been on the increase. National Park areas all showed gains in 1939. There has been an increase in applications for membership to AAA clubs, and the new car sales so far in 1940 exceed those of the same period a year ago.

The booklet then devotes some space to the two World Fairs. We do not wish to decry the American spirit that will launch two such enterprises simultaneously during a period of economic stress, but we do know that from the standpoint of benefit to the country at large they were a distinct flop. It is true that the number of tourists increased between 11% and 12% in 1939, but their expenditures decreased in every state except New York and California.

But to return to the booklet. It states that the final stages of highway planning surveys now being conducted throughout the nation will gear our highway system to the needs of modern traffic. While reports now are concentrated primarily on relieving congestion in and out of cities, a master plan of development is to be evolved to provide vastly improved facilities for the long distance traveler.

It cites the prospect of the proposed Alaska - South America route and calls attention to the fact that already a 3,303 mile stretch of uninterrupted highway exists from Gaspé Peninsula in Canada to lower Mexico. The article concludes with the assertion that to promote and encourage motor travel for pleasure, a ceaseless battle must be waged against all annoyances and hindrances that tend to discourage the use of motor cars. State barriers must be eliminated as well as visitors permit requirements, unnecessary red-tape causing delay and there should be uniform fair and impartial traffic law inforcement . Perusal of this booklet makes us feel more stongly than ever, (1) That Montana has a wonderful chance to share in the nation's largest industry. (2) That we are neglecting a business opportunity due to the lack of authorization and appropriation for a centralized State Publicity Division devoted to travel promotion. (3) That to intelligently and successfully promote travel, careful surveys of tourist expenditures and tourist sources must be made. Until such authorization can be procured, this department, which is vitally interested, can do its part by maintaining its enviable reputation for courtesy and helpfulness to the traveling public.

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SIDE SWIPES

BY PSYNUS

That's pretty good, Johnny, but this is the way I heered it.

A Western lady was taken to a meeting of a Boston club. "From where do you come?" one of the dames asked. "From Idaho", the Western lady replied. Patting her hand in kindly fashion, the Boston lady said, "My dear, I am sure you will not take offense if I tell you something you ought to know. WE pronounce it 'Ohio'."

+

This insomnia's got me worried - I can't sleep even when it's time to get up.

+

To erect a statue of Huey Long, the recently defeated, Long-machined legislature appropriated $50,000. A campaign for contributions had brought in $75.

+

The group of spots on the sun that caused the recent disturbance was 400,000,000 sq. miles in area. This was not the biggest spot group of recent years. In fact, the eleven year sunspot cycle is now in a declining phase. But this time the earth was right in the line of fire.

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Major Armstrong's remarks about television, which occupies the frequencies to which FM (frequency modulation) would like to expand. "I am convinced that the television people....will soon realize they can operate to better advantage in frequencies higher than those upon which they are now operating....If I hadn't been so busy showing the world how good FM is, I might have shown the television boys how to do it."

+

Inventions on which U.S. patents were recently granted include:

Eyeglasses with a rear view mirror.

An ice-bag shaped like a hat for headache sufferers. (Hiya Bill.)

A dry shaver equipped with an abrasive wheel to rub off the whiskers.

A dice cup which gives a signal when the dice have been shaken enough.

A cigarette printed with advertising matter in invisible ink, which becomes visible when the cigarette is smoked.

A burglar-catching window which drops catches the burglar around the middle when he is half way over the sill.

A coffin with built-in illumination.

An alarm clock, for heavy sleepers, which drops ropes to tickle the face.

A non-dripping hot dog, with a hole through the middle in which the mustard is deposited by a tube.

+

A few months ago, three delivery trucks pulled up before the Columbia Broadcasting Building in N. Y. Inside the vans were packages of every size, from every corner of the U.S., containing ties, cuff links, handkerchiefs, china, lingerie, carving sets, floor lamps - even a radio. All were addressed to Dr. & Mrs. John Wayne.

There are no such persons as Dr. & Mrs. Wayne, except on a radio serial called "Big Sister", in which the physician-hero had recently married the heroine. The gifts were from unknown admirers of this wholly imaginary couple. The Wayne are but two of 500 radio serial characters who experience this literal response to their fictional adventures every day.

+

Six manufacturers sponsor two-thirds of all the daytime serial hours; soap-makers first, breakfast foods second, drugs third. 84% of all daylight time on the air is devoted to "true-to-life" problem dramas.

+

Mr. Farley ended a trip that took him through twelve states in twelve days, made 76 appearances and addressesses, attended ten state chapter conventions

of the National Association of Postmasters, dedicated six new post offices, launched three new postage stamps, ate publicly six breakfasts, ten luncheons, 12 dinners, two barbecues. Twenty-four times the menus included fried chicken and ice cream; ten times potato salad.

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For the benefit of doodlers, telephone booths at Willard Straight Hall, Cornell U., were recently equipped with blackboards, chalk and erasers.

+

Kung Fu-tze (Confucius) did not say: "Now you're cooking with gas."

+

In response to popular demand, a free playground for adults has been opened at Jones Beach, Long Island, complete with large scale scooters, kiddie cars, seesaws, stilts, swings and tricycles. On opening day 1500 people, mostly middle-aged, tried them out and predicted that the playground would "go over big".

+

Infra-red radiation tests show that dehydrated castor oil is a close chemical neighbor of tung oil, and like tung oil, it yields a desirable, minutely wrinkled film when it dries. Some tung is produced in the U.S., but the vast bulk is still imported from the troubled Orient. Chemist J. C. Weaver of Sherwin-Williams Co. declared that dehydrated castor oil should help relieve the U.S. of dependence on foreign supplies not only of tung oil but of perilla and linseed oils as well.

+

Stockings, as handsome as silk, continued to be sold only in Wilmington, where each customer must tell her name, give a Wilmington address, and buy no more than three pairs. Nightfall of Wednesday find few pairs of nylon hose left. Meanwhile DuPont announced that the nylon chemicals would be put to many other uses besides stockings; greaseproof paper containers, non-cracking patent leather, waterproof clothing, flexible window panes. Not to be outdone, Carbide & Carbon Chemicals Corporation announced that its "Elastic Vinylite" was being made into chemically inert beer pipes, men's shoes, babies diapers, bedroom slippers, shower curtains, aprons, waterproof sheeting, women's hats, chair covers, card table covers, insulation.

+

"The louse may be the greatest of war's horrors," an editorial in Lancet, British medical weekly says, "By the disgust that it produces, by the sleeplessness that results from it, by the ubiquity of the skin lesions, and by the mortal disease (typhus fever) that it carries in its bite, it surpasses any. Because it is unremitting, the soldier dreads it more than artillery fire.... From the slow crawl of the louse over his body there is no respite. Tomorrow and tomorrow and tomorrow it will go on.

+

Last year 3,000 U.S. locker plants did a gross business of 20 million dollars. By 1940's end the completion of 750 new plants is expected to up the industry's investment of 45 million. Today thousands of farmers go to cold storage locker plants, rent lockers big enough to hold 250 lbs. of meat (or 6½ cu. ft. of any food) for $10.00 per year. The plants quick-freeze their meat, fruit, vegetables. 75% of the plants are situated in rural areas, but lockermen have their eyes on the big city markets. They say, for example, that housewives can save $100 on the annual meat bill of the family of five by buying a side of beef wholesale at a little better than half the retail price and having a locker plant's butcher cut and freeze it.

+

To make grass fit for human consumption, Chemists Kohler, Graham and Schnabel, dried, bleached and ground the leaves of wheat, barley, oats and rye, produced a white powder with a slight malt flavor. The scientists ate this grass all winter, caught no cold, enjoyed excellent health. Three U.S. factories and one Canadian are now making powdered grass. Approximate cost - 6¢ per lb. Said the grass eaters to the American Chemical Society meeting, "The use of only 12 lbs. of powdered grass a year....will supply the necessary factors for a liberal diet to all U.S. families at a price they can afford for the first time in history. After four years of analysis and experiment they had found that grain grass contains all the vitamins except D.

+

In the early 19th century, shortly after chemists discovered ether and nitrous oxide (laughing gas), some medical studen

went on jags, taking a few sniffs of one drug or the other until half-conscious and happily drunk. In the early 1840's young Dr. Crawford Long sniffed ether at parties, but was clear headed enough to notice that his drunken friends, if they came to blows, felt no pain. So one day in 1842 he fearfully soaked a towel in ether, anesthetized a friend before removing a tumor. Delighted with his success, Dr. Long tried ether on eight other patients. But gradually the word spread around that he was a sorcerer and he was forced to give up anesthesia.

+

In Miami 2001 housefliers were turned loose. On 2000 of them, painted silver, a bounty of $5 a piece was set. the 2001st fly was daubed with gold; on his head went a price of $500. To protect itself from pseudo-hunters who might catch any old fly, paint it gold or silver, the company dyed its flies with special chemicals. Those claiming rewards were obliged to present an open can of Flit with each piece of game bagged. Mum was Stanco on the bag's size, rumored to be about 400 silver-spots. After a week's hunting, Stanco disclosed that golden "Big Butch" was still on the wing, or dead of natural causes.

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In Omaha, Bolus J. Bolus, unsuccessful candidate for municipal judge, filed his campaign expense account with the Election Commission. Item: "Ten cents for aspirin the day after election."

And a check for a short beer.

+

Dentist Isaac Greenwood supplied grim-lipped George Washington with a set of wooden teeth (they splintered), a set of iron teeth (port wine rusted them), and a dressy set of bone teeth.

+

Psychiatrists now generally consider alcoholism a disease, specifically a psychoneurosis. Alcoholics generally drink, not just because they like liquor, but to escape from something - a mother fixation, inferiority feelings, an intolerable domestic situation, social or economic maladjustment. Nagging by families usually makes things worse.

+

K-42-B is a new alloy of iron, nickel, cobalt, chromium, manganese, silicon, carbon, titanium, which maintains extreme hardness at high temperatures. Two bell shaped castings, one of ordinary steel, one of K-42-B were heated red hot in a furnace. When the red-hot steel bell was struck with a hammer, it was too soft to respond with anything but a thud. But the red hot K-42-B bell, when struck, rang out clearly like a church bell on a sparkling winter day. The Westinghouse people call this exhibit "Hell's Bells".

+

Recently Britain released details of the puncture-proofing methods learned by experts from examination of a Heinkel bomber down in Scotland. No metal is used in the new tanks except for pipe connections and caps. The inside shell is fibre sheeting braced with fibre ribs. Over that is a layer of buckskin, next a layer of raw rubber 1/8 inch thick, covered with a thin skin of vulcanized rubber. When a bullet pierces the tank, the raw rubber reunites and the buckskin is swelled by leaking gasoline, so that together they plug the hole. U.S. airplanes have gas tanks similarly designed, but do not mount them for peacetime flying because they are heavy, expensive.

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For a sponsor, CBS statisticians prepared an analysis of U.S. radio listening, coast to coast:

Of the 33 million U.S. homes 28 million families own radios. Also in use are 6,500,000 auto radios.

83.5% of radio homes tune in daily for an average of 5.1 hours.

Estimated total U.S. audience, 70 millio

In 1939 750 U.S. Stations broadcast an average of 16 hours daily. Tuning families paid a total daily electric bill of $290,000.

The over-ripe sincerity of a radio announcer's voice.

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Metallographer Oscar E. Harder of Battelle Memorial Institute (Columbus, Ohio) working with Inland Steel Company's research staff, has developed a lead-steel alloy (one part lead to 500 parts of steel) which is just as strong as lead-less steel, but can be machined 30% to 50% faster for mass-production parts. The soft, tiny particles of lead in the alloy serve to lubricate the points where the tool cuts; the tool stays sharp longer, the machine runs faster.

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Curves & Angles

NOTE TO EDITOR: O.K. Boss, we took your public "razzing in last month's issue about the scarcity of news in our column, but watch out this time. Perhaps we were too busy doing this and that to get our work done, or maybe we were simply suffering from the first pangs of spring fever (yes, we did have spring in March, remember?) Anyway, here goes ---

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For the benefit of all you men who have been wondering -- the new red-haired girl in the Planning Survey is Lucille Angvick and the brunette is Jane Schuyler. You can get the phone numbers yourselves.

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It seemed like Old Home Week around the building when both Jane Bell Gough and Alice Quinlan Pratt were in our midst. Jane has been helping Bob Fletcher since Don was transferred to the Shop, and Alice has been busily pounding the typewriter in the Bituminous office.

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The requisites for a stenographer cover a vast number of things as Jane found out when Bob Fletcher wanted her to break in his new teeth for him.

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WOMEN, GENERALLY SPEAKING
(Some Half-Wit has Found)

Lives 75 years.
Marries at 26.
Has a baby weighing 7 lbs. 8 oz.
Quarrels with her husband twice during first year of marriage.
Is 5 ft. 3 in. tall.
Weighs 130 lbs.
Goes to the movies 2700 times.
Sleeps 26 years.
Spends 8 years at housework.
Cleans her teeth 28,000 times.
Eats 3 tons of candy, costing about $2500.
Grows 38 yards of hair.
Spends 6 days hunting her glasses.
Talks for 75 years.

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Patrolman and Mrs. Alex Stephenson have been transferred to Missoula. Mrs. Stephenson was the former Jean Smith, at one time employed in the headquarters patrol office.

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Anyone wishing to contribute to the fund to provide crutches for Horace (Old Man) Williams, may leave their hard-earned shekels at Room 219. Willie has the gout and has been limping around like he was at least 106.

And going to the other extreme, Henry Helland, of the Bridge Division proudly rides his shining streamlined new bicycle to work each day. Well, almost every day, except when the wind blows a little or the skies seem a bit hazy, or maybe Hank has been out late the night before. Anyway, everything has to be all right and it's all the same as one person we know who went out skiing every Sunday lastwinter, but really skiied only when the snow was absolutely perfect, which was about twice all winter. The rest of the time that person sat around in the chalet and told everyone why he, she or it didn't ski. But let's get back to Henry who doesn't ski, or at least didn't do so this year, so we were not discussing him a few lines back. We do give him a lot of credit for joining the Grin and Take It Club along with Grant Swaney. We are glad to know that there are two members, which makes enough for a president and secretary instead of one person having to do all the work. So far no meetings have been held that we know of, or don't we know everything? We wonder if there is a little dissension among the members (perhaps we should say between the members, or Ye Editor will jump all over us). What's bothering us is why don't these two gentlemen ride down the street together and tell the rest of the world where to go)putting it mildly). They have taken a lot of razzing about riding their bicycles and we suggest that they put their handle bars together and take up a little of that space on 6th Avenue occupied by the lazy scoffers who ride in cars. We would like to follow suit and ride a bicycle to work, too, but there is one little matter that botners us which we won't mention just now. More power to you, brave souls. Why don't you have a membership drive?

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Our brand new reporter from California, M. Knowles, who was put on the payroll last month (don't get excited, M. K., we don't get anything for this either except when we are late getting in our "Stuff" or don't have much and then we get plenty) comes through again and this time has some stenographic boners for your amusement. Incidentally, you gals who never have any contributions might look around your office for something of this sort. Yes, we all make mistakes and some good ones, too.

"The central span is a sink-span."
"When we have more time to examine the P.S. and E., we will finish you with further comments."
"This grade crossing undoubtedly should be furnished with automatic buriers.

Typed into construction reports from engineer's longhand which undoubtedly is the worst in the world:

"Material was stockpiled on the project every 4 inches."
"Time expired on contract: 15 dogs."
"Equipment on project: 2 wenches, in side ditches."

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And now putting into words everyone's thoughts these days.

Spring has sprang--
The grass has riz--
I wonder how the flowers is--?

* * * * * * *

A little grain of wheat was bowing and blowing in a great field. It sang in the wind and swayed under the sun. Then it took a little nap. When it awoke it was lying in a loaf of bread. "My God!" said the little grain of wheat, "I've been reaped!"

MATERIALS LABORATORY PROGRESS REPORT
ON
AN INVESTIGATION OF THE ADHESIVITY OF
BITUMINOUS MATERIALS TO LOCALLY AVAILABLE AGGREGATES
IN THE PRESENCE OF MOISTURE

CONCLUSION

(Note: The April issue of Center Line contained Part 5 of this article, which dealt with the chemical treatment of distinct types of aggregates from different Montana Highway Department projects. This concluding article on the above subject deals with the treatment of aggregates from other projects about the state and finally, the conclusions derived from our entire research program on chemical treatment.)

The aggregate type from Project FAS $4A_1$ consists of partially altered granitic material, closely related to quartz monzonite.

Test results on preconstruction samples show this aggregate to be better than average. This is due to the fact that the mineral surface of the natural aggregate has been activated by the partial decomposition and alteration of the ferro-magnesium minerals present.

	Natural	Manufactured
Swell	0.0070-0.0080	0.0045 - 0.0110
W.A.P	0 - 18	30 - 40
Strip	Fair/ Good	Poor- Fair/Good

An added indication that the mineral surface of the natural aggregate has been activated, is shown by the definitely poorer results that the crushed material show in the table above.

The aggregate is very amenable to treatment and every method tried proved successful. Treatment with the wet method, using solutions of $Pb(NO_3)_2$ as activator and either Na Oleate or oleic acid as collector, showed an improvement in the crushed material from poor to very good.

The addition of Na_2 Oleate alone greatly increased the adhesivity of the oil for the aggregate, as did treatment of $Pb(NO_3)_2$ and oleic acid to the natural aggregate.

This aggregate as discussed earlier in the report with regard to mat stability. A higher viscosity oil was recommended for increasing the cohesion and such an oil could well be used in conjunction with the chemical treatment of this type of aggregate.

PROJECT #4A TITRATION TO END POINT

	ACTIVATOR		COLLECTOR		STRIP	
Oil	Kind	Amount	Kind	Amount	Test	Remarks
SC-3 12%	$Pb(NO_3)_2$	18 cc	NaOleate	18 cc	Very Good	Titrated to zero end point.
SC-2 12%	$Pb(NO_3)_2$	16.5 cc	NA-Oleate	18 cc	Very Good	Water slightly cloudy at end point

Continued.

PROJECT #4A TITRATION TO END POINT

Oil	ACTIVATOR Kind	Amount	COLLECTOR Kind	Amount	STRIP Test	Remarks
SC-2 12gm.	$Pb(NO_3)_2$	30 cc	Na Oleate Oleic Acid	30 cc 18 cc	F - Fair C - Very Good	Could not titrate zero end points due to the fact that it was natural aggregate. Brown emulsion resulted. Ammonium Hydroxide was then added in excess, resultant mix dried in oven and mixed to coat completely.
SC-2 12gm.	$Pb(NO_3)_2$	27 cc	Oleic Acid	24 cc	Very good	Water very clear at end point.
SC-2 12gm.	$Pb(NO_3)_2$	15 cc	Na Oleate	15 cc	Very Good	Titrated to zero end point
SC-2 12gm.			NH_4Oleate	18 cc	F - Fair C - Good	NH_4 Oleate prepared by adding equivalent ammonium hydroxide to oleic acid.
SC-2 12gm.	$Pb(NO_3)_2$	24 cc	Oleic Acid	24 cc	Very Good	Brown emulsion resulted as the reagents were added the natural aggregate. The mix was oven dried and mixed to complete coating.

The aggregate type from Project #101 is a mixture of moderately hard metamorphic sedimentary altered sandstone and quartzite. The fines are high in alkaline material.

The test results on preconstruction samples from this project were unusally poor due to the high alkaline content, which exhibited a pH of 9.0 - 9.2. Experience also shows that not only is this aggregate extremely hydrophilic but is subjected to extreme adverse moisture conditions as well, and such being the case, mat behavior has been very poor in the past.

Laboratory results on test samples show the following range of values:

	Natural	Manufactured
Swell	0.0125 - 0.0810	0.0030 - 0.0075
W.A.F.	5 - 25	26 - 40
Strip	Poor - Very Poor	Poor - Very Poor

Treatment was first attempted on the natural aggregate, using acids to lower the pH and thus overcome the effects of the high alkaline factor. Although the pH was lowered by this procedure to 7.5 - 7.6, there was no acid-soluble activators present to benefit the resultant mix.

Also, the effect of a higher viscosity oil, highly cracked, was studied, but no beneficial effect was noticed. Increasing the percentage of the highly cracked material did not benefit the mix.

2% of collector (oleic acid) was added alone to the oil used in a mix but no improvement was noted with this treatment.

Treatment with activator alone ($FeCl_3$) showed no beneficial results, and the addition of both an activator and collector in feasible amounts, showed such little improvement that it could be disregarded.

However, the crushed material, which does not have the detrimental, high alkaline natural fines, is very amenable to treatment with either $Pb(NO_3)_2$ or $FECl_3$ as activator and oleic acid as the collector.

PROJECT # 101

	ACTIVATOR		COLLECTOR		STRIP	
Oil	Kind	Amount	Kind	Amount	Test	Remarks
SC-2 (Yale) 12gm.					Very Poor	Treated with HCl to reduce pH to 7.6. Dried to hard cake dampen and oiled. B emulsion resulted. This was then dried to complete coating.
SC-4 (Home) 12 gm.					Poor	14.8 cc. of 10% HCl added to reduce pH to 7.5, which was then dried and oiled 200°F.
SC-4 (Home) 12gm.					Poor	This mix retained gra color after stripping
SC-4 (Home) 17 gm. (6.8%)					F - Very Poor C - Poor	Increase in the percentage of oil did no benefit mix.
SC-4 (Home) 15gm.			Oleic Acid	.3 Cms.	Poor	The Oleic Acid was added to the oil befo treating mix. The acid was 2% of the oil content.
SC-3 (Yale) 13.7gm.	$FeCl_3$ $6H_2O$	105 cc			Poor	Mix was dried and mix to complete coating.
SC-3 12gm.	$FeCl_3$ $6H_2O$	50 cc	Oleic Acid	25 Cms.	C-Poor F-Very Poor	Fines were brown and the course was grey indicating very sligh improvement.
SC-2 12gr.	$Pb(NO_3)_2$	24 cc.	Oleic Acid	30 cc.	Very Good	Treatment of crushed material. Titrated to zero end point, dried and mixed to complete coating.
SC-3 12gr.	$FeCl_3$	34 cc.	Oleic Acid	30 cc.	Very Good	Treatment of crushed material. Titrated to zero end point, dried and mixed to complete coating.

The aggregate type from project 178-A is composed of a mixture of limestone, shalas, quartzite and some igneous material.

The test results on preconstruction samples show ranges in values as follows:

	Natural	Manufactured
Swell	0.0300-0.1200	0.0018-0.0185
W.A.P.	35-45	35-45
Strip	Poor-Very Poor	Poor/Good-Very Poor

This project was treated a little differently from the others, in that samples from different levels and areas of a certain pit which was the most available for the job were tested.

In the chemical treatment of aggregates from this project it was found that in the wet method, titration to an end point, most samples were susceptible to treatment. The only difference noted was that varying amounts of activator and collector were necessary to bring the mixes to the end point.

In two cases, however, the character of the material was such that an emulsion formed and it was found impossible to bring about an end point.

PROJECT 178-A TITRATIONS TO END POINT

	ACTIVATOR		COLLECTOR		STRIP	
Oil	Kind	Amount	Kind	Amount	Test	Remarks
SC-2 12 gms.	$Pb(NO_3)_2$	34.5 cc	NaOleate	33.5 cc	Very Good	Excess solution very clear at the end poin Lab. #50168
SC-2 12 gr.	$Pb(NO_3)_2$	27 cc	NAOleate	27 cc	Very Good	Clear at zero end point. Lab. #50174
SC-2 12 gr.	$Pb(NO_3)_2$	28.5 cc	NaOleate	28.5 cc	Very Good	Clear at zero end point. Lab. #50177
SC-2 12 gr.	$Pb(NO_3)_2$	34.5 cc	NaOleate	34.5 cc	Very Good	Clear at zero end point. Lab. #50175
SC-2 12 gr.	$Pb(NO_3)_2$	21.0 cc	NaOleate	21.0 cc	Very Good	Clear at zero end point. Lab. #50183
SC-2 12 gr.	$Pb(NO_3)_2$	54.0 cc	NaOleate	54.0 cc		Impossible to get end point regardless of amounts of reagents added. Lab. #50194
SC-2 12 gr.	$Pb(NO_3)_2$	24.0 cc	NaOleate	24.0 cc	Very Good	Clear at zero end point. Lab. #50186
SC-2 12 gr.	$Pb(NO_3)_2$	42.0 cc	NaOleate	42.0 cc		No zero end point possible. Lab. No. 50108
SC-2 12 gr.	$Pb(NO_3)_2$	36.0 cc	NaOleate	36.0 cc		No end point with addition of 36 cc of each reagent.
	$Pb(NO_3)_2$	21.0 cc	NaOleate	21.0 cc	Very Good	The mix from the first treatment was dried and then 21.0 cc, more were added to a zero point. Lab. #50202
	Total	57.0 cc		57.0 cc		

The aggregate type from Project 253-D is glacial wash consisting of hard rounded quartzite.

Laboratory results on preconstruction samples show the following range of values.

	Natural	Manufactured
Swell	0.0478 - 0.1199	0.0045
W.A.P.	8 - 9	35
Strip	Poor - Good	Very Poor

From the above, the naturals seemed to have a surface that is well activated and as the strip on the crushed was total after standing for 24 hours without even stirring, it seemed evident the crushed was composed entirely of fairly clean silica.

With this aggregate as compared with aggregate type from #60, either collector or activator alone will bring about no improvement. With the proper amount of collector and activator present, the crushed aggregate is changed from extremely hydrophilic to an almost perfect hydrophobic.

PROJECT 253-D

	ACTIVATOR		COLLECTOR		STRIP	
Oil	Kind	Amount	Kind	Amount	Test	Remarks
Yale SC-3 10gms.					Very Poor	This mix was so poor that the addition of water immediately started stripping it without the stirring action.
			Oleic Acid	22 cc.	Very Poor	The addition of collector showed no improvement.
	$Pb(NO_3)_2$	20 cc.			Good	The mix was dried then mixedat 200°F. After two weeks, the mix still retained its oil but lacked stripping.
Home SC-3 14 gms.	$Pb(NO_3)_2$	26.8 cc.	Oleic Acid	18 cc.	Good	Added the $Pb(NO_3)_2$ to the aggregate and then dried. The Oleic Acid was added at the time of mixing with the oil.
Yale SC-3 10 gms.	$Pb(NO_3)_2$	.4 gms.	Oleic Acid	7cc.	Very Good	The oil was heated to 200°F. and the $Pb(NO_3)_2$ and Oleic Acid added direct to the oil.
Home SC-2 (Cracked) 10 gms.					F-Fair C-Good	Oil was heated to 350°F. before mixing with aggregate.
Home SC-2 (Cracked) 14 gms.	$Pb(NO_3)_2$	20 cc.			Good	Lead nitrate added to mix with oil, overn d and mixed to complete coating. There was evidence of slight ov oiling.

Precoat Discussion

At the suggestion of representatives of companies furnishing Montana with bituminous materials and with their cooperation in furnishing this laboratory with various oil fractions, experiments on the feasibility of precoating aggregates were conducted. The theory of precoating is based on the idea that the aggregate would be completely coated by the lighter fractions and would absorb them, thus furnishing a bending surface for the asphalt to adhere to, thus overcoming the stripping action of moisture.

Aggregates showing poor to very poor strip results were selected for this work. Representative samples of the aggregate were heated and treated with a sufficient amount of the precoat material used to completely coat the mix. This mix was then oiled with SC-3 material and allowed to air-cure 24 hours. The regular strip procedure was then run on them.

Precoat Oil	Final Oil	Strip
Kerosene Distillate	SC-3	Poor
RC - Naphtha	"	Poor
Reduced Crude	"	Poor
Pressure Gas	"	Very Poor
Heavy Blending Oil	"	Very Poor
Flash Gas Oil	"	Very Poor
Cracked Light Oil	"	Very Poor
Pressure Distillate	"	Very Poor
Mc-1 & MC-2 Diluent	"	Very Poor

The data shows that the precoating material does not fulfill its intended function of forming a bending surface that will adhere to the oil or resist the stripping action of water.

CONCLUSION

In the foregoing, we have attempted to show somewhat the relationship of the major factors involved in the early deterioration of bituminous mats. Mechanical stability is essential to withstand the impact of traffic. Stability depends upon the cohesive properties of the oil combined with a well designed arrangement of interlocking aggregate particles. Cohesivity cannot function at a maximum unless the oil will adhere to the aggregate. Good adhesivity will prevent the separation of oil and aggregate in the presence of moisture.

We show that it is possible by chemical treatment to change the adhesive properties of a bituminous mix such that it will exclude entirely the stripping action of water.

The chemical treatments of aggregates are based to some extent on the same fundamental principles that govern flotation practice. However, the application of these principles for road building purposes will never involve the complex science of selective flotation, for it will always be desirable to coat the maximum number of aggregate particles with a water repellent film. In selective flotation major difficulties center around the desire to make one portion of the mineral hydrophobic and the remainder hydrophylic.

The possibility of finding reagents and a treating procedure applicable to all aggregate seems remote. However, present indications are that the problem of determining a desirable treatment for each particular aggregate type will offer no serious difficulties. More research will be necessary to determine the important chemical conditions that are present in a natural aggregate which gives it hydrophobic properties with respect to our available bituminous materials.

Exhaustive investigation of each and every pit is not necessary or even desirable. A study of the major aggregate types not only may lead to the discovery of inexpensive treating reagents or procedures but would also serve as a guide in the geochemical process of slecting natural hydrophobic material.

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